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# PAPERS

# IN

# *POLITE ARTS.*

## N° I.

## DRAWING-PAPER FOR ARTISTS.

*The small or* ISIS SILVER MEDAL *was this Session voted to Mr.* GEORGE STEART, *of the Montalt Paper-Mills, Coomb Down, near Bath; for his* LINO-STEREO TABLETS, *or* SOLID LINEN TABLETS FOR DRAWING ON, *&c. The following communication has been received from Mr. S. on the subject, and specimens of his Tablets, both plain and tinted, are placed in the Repository of the Society.*

De Montalt Paper Mills, Coomb Down,
SIR; near Bath, Feb. 12th, 1819.

I BEG you will lay before the Society of Arts, &c. the six dozen Lino-Stereo Tablets inclosed, invented and manufactured by me, for their inspection. If the Society should be pleased to consider my improvements in an article at present in great request worthy their patronage, I shall feel much pleasure in receiving it, and also in communicating any further information if required.

I am, Sir,
&c. &c. &c.
GEORGE STEART.

*A. Aikin, Esq.*
*Secretary, &c. &c.*

The Tablets are of two sorts, *rough* and *smooth;* the former finished with a grain or tooth, the more effectually to receive the full touch of a pencil, chalk, or crayon, for which kinds of drawing they are principally intended; while the latter have a much more level surface, for painting in water-colours, or for other delicate works.

The Tablets will be sold to the public at the usual prices charged for the *pasted* card boards. I have already manufactured many thousand dozens for that purpose.

The extra-stout Drawing-Papers, or Card-Boards, as they are usually denominated, are always made by pasting several sheets of paper together, in the manner of a common pasteboard, and afterwards bringing them to a smooth face by pressing and rolling. The pasting is a dirty operation, and the occasion of many defects, some of which are fatal to the degree of perfection and nicety required in a good drawing-board; for it often happens that, let the workmen be ever so careful, the boards are contaminated by a portion of the paste being left on the surface in handling the sheets; and although this may at first escape the eye of the Artist, yet it will be discovered, perhaps when too late, in finishing a picture. But a far more serious accident than this frequently occurs, which it is impossible to foresee or avoid; for after the artist may have spent many days and even weeks upon a favourite drawing, having occasion perhaps several times to re-wet a particular part of it, in order to produce a desired effect in the finishing, the adhesive qualities of the paste are destroyed, a separation of the sheets takes place, and blisters rise upon the surface, to the ruin of his labours. It has been often remarked, also, that drawings made upon pasted boards, and exposed in rooms where fires are seldom kept, have very soon been spoiled, whilst a print or a drawing on a single sheet of paper in the same situation, has remained quite perfect. This is readily accounted for, from the great tendency of paste to mould or mildew. A fourth great defect, is, that the far greater part of the drawing and writing papers now in use in this country are of a hollow or spongy texture: this arises from their being made of an indiscriminate mixture of linen and cotton, the greater elasticity of this latter preventing its fibres from closely uniting with those of the flax: the consequence is, an irregular surface, and a porous spongy substance, very different from that which an adherence to the good old-fashioned practice of using fine linen rags only in the manufacture of superior papers would produce. Another serious evil is, that some manufacturers having recourse to the aid of chemistry for bleaching or whitening rags of very inferior quality, by means of the oxymuriate of lime, supply a drawing-paper sufficiently fair to the eye, but which, as it retains a part of the muriatic acid, speedily destroys the fine and delicate tints laid upon it.

The Lino-Stereo Tablet is entirely free from these objections, for the following reasons:—1st, It is not composed of several sheets pasted together, but is moulded from the pulp, of any required thickness, in one entire mass; thus the risk of pasting is avoided, and no separation of the component parts can possibly take place, though wetted ever so often. 2dly, Instead of being compounded of linen and cotton, it is wholly and solely manufactured from the best and purest white linen rags, most carefully selected; and consequently without the aid of the oxymuriate of lime, or any bleaching process whatever.

De Montalt Mills, Bath,
March 4th, 1820.

SIR;

IN compliance with your favour of the 28th ult. I herewith transmit some samples of the grey and other tinted Tablets, manufactured from linen rags, previously dyed in the pulp, which I shall thank you to lay before the Committee of Polite Arts for their inspection. I believe the colours are permanent, having made many experiments to prove the stability of the colouring materials. The whole were manufactured last Summer, and I regret I cannot at present send more samples, from the circumstance of the stock being nearly all disposed of.

I am, Sir,
&c. &c. &c.
GEORGE STEART.

In describing the manufacture of the Lino-Stereo Tablet, it may be necessary, in the first place, to point out the requisite materials, or utensils, and then explain their uses, confining myself to the technical phrases employed by manufacturers in Paper Mills, in order to be more clearly understood.

*The Utensils.*—1. A mould of the required dimensions, similar to those used for making paper, but considerably stronger, and well supported by additional bars underneath, so as to enable it to carry, or bear a considerable weight or pressure on the face of it, without bagging; with a deckle from 1½ to 2 inches in depth, to retain the fluid pulp on the face of the mould, and to regulate the required thickness of the sheet or tablet; 3 or 4 of these deckles, of different depths, will be wanted for thinner or thicker substances.

2. A second mould or compresser, in every respect like the first, but so much smaller, that it will fall into and fill the deckle upon the face of the first mould.

3. A light press, very similar to a napkin press, large enough to admit the mould and its compresser, which is to be placed in the most convenient station, near the vat; or in lieu of it, a weight suspended by a pulley over the bridge, laid on the vat; but I consider the press most desirable.

4. A set of felts of the very finest manufacture possible to be procured, of the required size, are indispensably necessary.

5. A pair of rolls or cylinders of large dimensions, such as are used by the rollers of fine metals, made either of iron or brass, fitted up with the greatest truth, and highly polished on the surface, must also be provided, exclusive of all the other requisites in a well-conducted paper manufactory.

*The Process.*—In selecting the raw materials for the manufacture of the Lino-tablets, great care is taken to reserve the *best and purest white linen rags only*, rejecting all muslins, calicoes, and every other article made of *cotton*. The linen rags are then carefully sorted, overlooked, and cleansed, washed, and beaten into pulp in the usual manner practised by paper manufacturers of the first class.

The pulp being ready, and diluted in the vat by the proper proportion of pure water, the workman dipping his first mould into the vat, takes it up filled with pulp to the top of the deckle, and holding it horizontally, and gently shaking it, causes the water to subside, leaving the pulp very evenly set upon the face of the mould; having rested it for a moment or two on the bridge of the vat, the compresser with its face downwards, is now carefully laid upon the sheet or tablet, and both together placed in the small press close at hand, where it is submitted to a very gentle pressure, in order to exclude a great proportion of the water remaining in the sheet;—it is then withdrawn, the compresser and the deckle are both taken off, and another workman couches it, by very dexterously turning the mould upside down and pressing it pretty hard with his hands on one of the fine felts previously laid upon a very level pressing plank, by which means the tablet is left on the felt. The mould is then returned to the vatman, who repeats the process as before. The coucher in the mean time lays another felt upon the sheet or tablet just couched, whereon the second sheet is to be laid in the same manner, and so on, till all the felts are occupied, over which another level plank is placed, and the whole drawn away on a small rail-road waggon to the great press, where it undergoes a pretty severe pressure.

The tablets will now be found to have sufficient adhesion to bear handling with care, and are separated from the felts, and placed one upon another, so as to form packs; these packs are to be submitted again to the action of the press, till more water is expelled, then are parted sheet by sheet, pressed and parted again, and this is repeated as often as necessary, taking care to increase the pressure every operation, until the face of the tablets is sufficiently smooth; they are then carefully dried, sized, picked, sorted, &c. carried to the rolling-mill, and several times passed between the polished cylinders, to give them their last finish. The above is the process for the plain or white tablets. In making the tinted tablets, the following additional particulars are to be attended to:—

The rags are cleansed, washed, and beaten into half stuff in the usual way, the water being drained off, the pulp is put into a vat with a solution in water of acetate of alumine, or sulphate of iron, as a mordant or ground to fix the colour, according to the colour intended to be made; the whole is well incorporated, and suffered to remain for half an hour or more, when the colouring tincture, previously prepared, is added; after which, the whole being returned to the engine is beaten into fine pulp, and then wrought into tablets.

The dyeing materials I chiefly make use of are Mangrove bark, Quercitron bark, best blue Aleppo galls, sulphate of iron, and acetate of alumine. A due combination of these materials produces a great variety of drabs, greys, sand-colours, &c. and I believe more permanent or fixed, than can be produced by any other means.

The advantages to be obtained by this mode of manufacture over all others, are sufficiently explained in my former letter.

I am, Sir,
&c. &c. &c.
George Steart.

*A. Aikin, Esq.*
*Secretary, &c. &c.*

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## N° II.

## ARCOGRAPH.

*The small or* Vulcan Silver Medal *was this Session voted to* Benj. Rotch, *Esq. of Furnival's Inn, for an* Arcograph. *The Instrument has been placed in the Repository of the Society.*

SIR; March 21, 1821.

I have to beg you will do me the favour to submit the Instrument sent herewith, and which I have called an Arcograph, to the Society of Arts, hoping they will find it worth their consideration.

I am Sir,
&c. &c. &c.
Benj. Rotch.

This instrument resembles in use the cyclographs of Mr. Nicholson and others, being intended for the purpose of describing, on a given chord, circular arcs, the centers of which are beyond the limits of the drawing-board, &c. and which therefore cannot be obtained by means of the compasses. The instruments above alluded to, however, are not capable of indicating the measurement in degrees of the arcs which they describe. This very desirable improvement is effected by the addition of a graduated quadrant, the divisions of which show on inspection the magnitude of the arc contained between the extremities of the chord line; that is, between the points of the block *gg* (Plate I, fig. 9), against which the limbs of the instrument work.

*a a*, *a a* are the two limbs, made either of wood or metal; to one of these is attached the brass quadrant *b b*, divided into 180 parts; attached to the other limb is an arc *c d e*, rather exceeding a quadrant; at *c* a fiducial edge is formed, and a point is marked at 90 degrees from the extremity of *d*; so that when the point *c* and zero on the graduated quadrant, coincide, the two limbs *a a*, *a a* are in a strait line; on the outer edge of the quadrant are two projections, with steel screws, on which work the nuts *f f*, the shoulders of which clamp the arc *c d e* to the quadrant *b b* in any position. It is evident that when the limbs are placed at an angle of 90 degrees, the point of the intersection, when made to traverse between the blocks *g g*, would describe a semicircle, and if placed in a strait line, the same point would only describe a strait line, or no portion of a circle; therefore the quadrant being formed into 180 divisions, the division marked by the point *c* will always indicate the quantity of the arc drawn by the instrument. The arc *c d e* is jointed near the fiducial edge, for the purpose of turning up out of the way of the blocks when the limbs approach towards a right angle. Fig. 10 is a section of the joint on a larger scale;

the axis is a tube for receiving the pen or pencil, with a flanch at the lower extremity. On this axis turn the two portions of the joint attached respectively to the limbs of the instrument, and the whole is surmounted by a collar, on the top of which the hollow axis is rivetted, and this rivet binds the whole together, by means of the flanch at the lower extremity of the axis. The blocks *g g* must not be so thick as to prevent the socket or tube which receives the drawing pen or pencil from passing over them.